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ABSTRACT

Reported in this document are the Secretary of Education's personal recommendations for a sound elementary school core curriculum, presented by means of a report on a fictional "James Madison Elementary School." The report opens with discussion of the importance of commitment to course content and instruction in basic skills in elementary schools, the necessity of integrating content in elementary curriculum, and obstacles that may face implementation of the core curriculum. A chart outlining the program's educational goals precedes a more detailed description of the proposed program, which is for grades kindergarten through 8. Discussion focuses on the current status and suggested goals by grade for English, social studies (history, geography, and civics), mathematics, science, foreign language, fine arts, and physical education/health. Suggested reading lists (with emphasis on classics of children's literature) for grades K-3, 4-6, and 7-8 are provided in the English section. Included after the discussion of each subject area are profiles of curricular excellence from actual programs around the United States. (SKC)

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JAMES MADISON ELEMENTARY SCHOOL

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A Curriculum For American Students

PS 017495

William J. Bennett

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JAMES MADISON ELEMENTARY SCHOOL

A Curriculum For American Students

William J. Bennett, Secretary
United States Department of Education
August 1988

A popular Government, without popular information, or the means of acquiring it, is but a Prologue to a Farce or a Tragedy; or, perhaps both. Knowledge will forever govern ignorance: And a people who mean to be their own Governors, must arm themselves with the power which knowledge gives.

—James Madison (1822)

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INTRODUCTION

This book, my final report to the American people as Secretary of Education, is the conclusion to a body of work I began more than two years ago. In September 1986 I published *First Lessons*, a comprehensive statement on the condition and future direction of American elementary education — the first such report in more than 30 years. Late last year I released *James Madison High School*, a study of secondary school curricula that described in considerable detail the shared body of knowledge, the common language of ideas, and the moral and intellectual discipline that Americans want their children to possess. *First Lessons* and *James Madison High School* each stands on its own. But each in its way — as the hundreds of letters I received from curious and concerned parents, educators, and ordinary citizens made clear — points to another question. That is: how, exactly, can we achieve the broad goals articulated for elementary education in *First Lessons*? Which specific skills and elements of knowledge best prepare our children to attend James Madison High School? What, in other words, does a good elementary school curriculum actually look like?

That's a fair and important question. This document — *James Madison Elementary School* — is my answer.

This report is not a response to some freshly perceived crisis in American education. In *First Lessons* I concluded that, overall, our elementary schools were in pretty good shape. I still think that judgment is essentially correct. For the most part, American elementary schools face fewer and less severe problems than now plague our high schools. In recent years, our youngest students have, on average, made progress in learning. In fact, the Congressional Budget Office has reported that achievement in the elementary grades is today "by some measures at its highest level in three decades."

It's not hard to find reasons why. During my time in office I have visited and taught in dozens of superb elementary schools all over the country, schools with committed and able principals and teachers whose success with their students is a joy to behold. There are many others like them. Since 1986, the Department of Education's national recognition program has identified and honored more than 500 outstanding elementary schools — in Maine and Hawaii, in Alaska and Puerto Rico, and almost every place in between.

Signs of general improvement and examples of particular excellence are always welcome and encouraging, of course. But they are only a beginning. "Pretty good and getting better" cannot be our final word

on elementary education. More needs to be said on the subject, and much more work needs to be done. It is still too soon for our school reform movement to turn its attention elsewhere. The stakes are simply too high for casual satisfaction.

Elementary school has no small place in a child's life, after all. Indeed, except for the family, there is no institution so influential. We ask elementary schools to help shape our students' first and lasting ideas about themselves, their country, its culture, and the world; to give structure, substance, and meaning to basic knowledge; and to encourage our children's necessary interest in further learning. In importance and size, this mission dwarfs all others in American education. We enroll virtually our entire population of 5- to 13-year-olds in kindergarten through 8th grade. This fall, more than 32 million children will be taught by more than 1.6 million teachers in more than 81,000 American elementary schools.

What takes place in these classrooms will determine the future of American learning. Our system of education is like a pyramid. Each level — high school, college, and beyond — depends for the fulfillment of its aims and expectations on earlier student preparation and achievement. Failure at any one level will diminish possibilities for the next. And failure at the foundation — failure by any significant number of elementary schools to teach well, failure by any significant number of elementary school students to learn what they should — will diminish the whole.

Today, despite recent advances, the absolute level of American elementary school achievement is still too low. A series of careful national assessments suggests that our children have a still insufficient command of basic subjects: reading and writing, mathematics and science, history and foreign language, and music and art. International comparisons confirm these conclusions. In several important academic disciplines, American elementary school students lag well behind their foreign counterparts. According to pioneering research by Harvard's Jeanne Chall and other scholars of education, the problem becomes particularly acute around 4th grade, when the basic skills covered in earlier years must for the first time be applied to the study of more complex knowledge and ideas. This "4th-grade slump," as Professor Chall has dubbed it, hits our disadvantaged students with greatest force. But no group of American children is entirely immune, and by the time they finish 8th grade, too many of our students are ill-prepared for the kind of high school education we want them to have.

It's not their fault, of course. Children learn what adults choose to teach them. If we are dissatisfied with what our students know, then

we must improve the quality of instruction in our schools. And before we can do that, we must once again commit ourselves to solid content as a first principle of the elementary curriculum.

The Case for Content

How does education happen? E. B. White once remarked that he learned to write the way he learned to drive a car: by practicing with the ignition, steering wheel, accelerator, and brake before he worried about the complex engineering going on under the hood. Children learn their school subjects the same way — from the ground up. Before they can comprehend language as an abstract idea, they must learn the names of common objects and phenomena by repeating and remembering them. Later on, they learn to read these names as words by mastering the alphabet and unlocking the phonetic keys to written language. And later still, they develop skills and knowledge in particular subjects by accumulating essential information about them. Along the way, they become prepared to study the ideas and relationships such information naturally suggests. But no child can think critically or conceptually about American history, for example, if he doesn't yet know who George Washington was, or what took place at the Constitutional Convention in 1787. Information — basic content — must come first.

That learning is necessarily incremental and cumulative does not mean that it must be painful or unwanted. Quite the opposite, in fact. Education has a powerful ally in human nature. Any parent can confirm that young children have a healthy appetite for facts and information, even about subjects that may not become fully meaningful to them until much later in their lives. Most families do their best to satisfy part of this appetite at home, and most want and expect their elementary schools to help out. But many parents, it seems, are now unhappy with the help they're getting. By a two-to-one margin in the 1987 Gallup education poll, Americans all across the country said that our elementary schools pay insufficient attention to instruction in basic knowledge.

Opinions like these are not to be taken lightly. Determining goals for elementary curricula is not an esoteric or scientific pursuit for experts only, and parents need not be sophisticated in the language and literature of school research to tell good education from bad. When it comes to their children, it is American parents who have the strongest, sharpest, and truest motives for concern. If they want our

schools to teach their children more and better content — fundamental skills, facts, and ideas — they should be listened to.

Too frequently these days they are instead ignored. Received educational wisdom often stands opposed to common sense; today, unfortunately, much of it also stands opposed to content. In the professional schools that train our teachers and develop our curricula, it is still possible — more than a decade after the nation's disastrous educational experiments of the 1960s and 1970s — to see content-rich elementary study derided as "rote" learning, to be told that children may be taught "higher-order thinking skills" without reference to specific knowledge, or to hear that the "mere facts" of traditional school subjects are unimportant to early instruction in more relevant general "understandings."

These superstitions and prejudices still find their way into our children's elementary school classrooms — in English programs that spurn serious literature in favor of bland basal readers and skill-workbooks; in social studies teaching that neglects history and geography to concentrate on mundane details of everyday life; in mathematics instruction that, however dressed up with fancy new strategies and slogans, is nevertheless restricted to years of repetitive, rudimentary arithmetic; in science lessons without scientific method; in art and music "experiences" which rarely extend beyond undisciplined appeals to feelings and emotions; and in foreign language education that hardly exists at all. It sometimes seems that such curricula are constructed on the assumption that it doesn't really matter *what* young children study so long as it is frivolous, unchallenging, and easily accessible.

By criticizing so much current theory and practice I am not for a moment suggesting a helter-skelter reversion to some dismal pedagogy of autocratic teachers, passive students, stale and rigid classrooms, and stultifying memorization drills. This is not the 19th century; we have better ways to do our work, and I am all for them. The genius of modern American education has been its application of discoveries about the rhythms and patterns of childhood intellectual development to a system of mass and democratic schooling. These discoveries are real, and they are valuable. Today we know more about the process of learning than we ever have before. While we teach, we try to encourage our children to be inventive, flexible, and creative. We try to mobilize their interests, to accommodate our instruction to their individual needs, and to develop in them the capacity for self-expression and independent study. That is all to the good. My call for renewed commitment to content is not a prescription for willed ignorance about method and technique.

It is, however, a warning against a single-minded focus on method and technique that may distract or deter us from necessary public debate about curricular content. Information about the process of teaching and learning can reveal a lot about our educational goals — what their limits might be and how we might best approach them. But it cannot determine those goals on its own; it has little to say about what our elementary school students should know. That much is up to us.

James Madison Elementary School

I offer this document as a point of departure for future national conversation about the proper content of American education from kindergarten through 8th grade. Written with the advice of principals and teachers at a number of representative American schools, it is my idea of a sound elementary school core curriculum. It outlines a structure and sequence for knowledge and skills in seven subjects: English, social studies, mathematics, science, foreign language, the fine arts, and physical and health education.

Of course, these disciplines do not by themselves comprise the entire menu of learning that a good school can offer its students, and this book should not be read as an argument for the exclusion from elementary curricula of all other academic resources, topics, and ideas. In *First Lessons,* for example, I discussed the value of such curriculum-enriching tools as computers and a well-stocked library. I also described the "implicit curriculum" of character education that should suffuse every American elementary school program: calm and candid teaching of moral principles, insistence on order and firm discipline, and steady encouragement of solid work habits. These things are obviously still important; I have something to say about them in a number of places throughout *James Madison Elementary School.* But schooling in the full set of core academic disciplines should be central to the true purpose of American elementary education, and consequently this curriculum is primarily concerned with basics — with the subjects and lessons I think all our students must be prepared to pursue in high school.

To be sure, our students are individuals, and they bring differences in ability and background to their schools. There are below average and gifted students, there are students who speak English as a second language (or not at all), and there are students with learning disabilities and handicaps of varying kind and severity. For these students, most

local districts design particular instructional programs not treated in this document — advanced or remedial lessons, bilingual or special eduction, and so on. There will always be students who require supplemental attention; it should be available. Our schools need not assemble their curricula into rigidly identical packages, and our children need not enter and proceed through the elementary grades in absolute lockstep.

But instructional diversity and specialization must serve fundamental learning, not replace it. And recognizing student differences should not mean maintaining and magnifying them. "Historically, when we felt obligated to teach children to whom academic learning did not come easily, we modified the curriculum to make it easier for them to learn," writes Patricia A. Graham, dean of Harvard's Graduate School of Education. "That tactic must be changed," she believes. "The curriculum, filled with the subjects that do endure and do enlighten a child, needs to remain. The means of teaching it to all children will vary." Our children, whoever they are and wherever they live, share a future of common possibility and promise. They deserve an education — in its irreducible essence and from its first day of elementary school — of common substance. We may adjust our pedagogy to achieve our educational goals, but we must jealously retain and guard those goals, the goals *James Madison Elementary School* pursues: mastery of a core curriculum of worthwhile knowledge, important skills, and sound ideals.

Several things about the organization of this book's material require explanation. In *James Madison High School,* I arranged the curriculum into discrete courses as they might be taught in a traditionally structured, 9th- through 12th-grade secondary school — by different teachers in different rooms, across a school day of clearly delineated class periods. In most places around the country, intermediate, middle, and junior high schools follow a similar pattern of instruction. For clarity of definition, the present report refers to everything that happens between kindergarten and 8th grade as "elementary education." But the curriculum spelled out for its upper grades may be read and understood as separate courses appropriate to the years that bridge elementary school and high school, whatever institutional form they take.

Subject descriptions for the lower grades, by contrast, are not designed to imply a division of the curriculum into seven equal blocks of content and class time. In each of its first six or seven years, elementary school commonly involves a single teacher leading a single group of students through all or most of their academic work. The relative weight and balance of that work changes over time. Reading lessons

— treated in this book under the heading "English" — are a necessary focus of instruction in the earliest grades. Other subjects only gradually take an explicitly defined place in the curriculum. And even then they are seldom taught as isolated "courses." Small children do not make fine distinctions between fairy tales and stories from history, for example, or between geography and science. Disciplinary specialization must wait for later years.

That does not mean that the fundamental *content* of subjects other than English should be neglected — as it too frequently is — in kindergarten through 3rd grade. To the contrary, an early school introduction to a broad range of knowledge and skills is the only possible measure of prevention against 4th-grade slump. As it must, *James Madison Elementary School* concentrates its first few years' efforts on reading and writing. The list of recommended readings I offer for these grades emphasizes classics of children's literature — in part because they are so often missing from elementary school instruction. But even for kindergarten, this book describes substantial and important material derived from social studies, mathematics, science, and the arts.

Such learning must not be arbitrarily delayed until children can categorize it into abstract branches of knowledge. And it need not take valuable time away from reading and writing. If our students need to know who the President is, what a circle looks like, where the sun and moon are, or how a musical instrument makes its sound, then we can frequently offer them *stories* about these questions, and they can develop and exercise their language skills while they are learning the answers. Skillful elementary school teaching should unify the curriculum — using one subject to reinforce the next, and making the content of each one come alive by calling upon the other knowledge children are acquiring.

I make a few such observations and suggestions about teaching in these pages. But I do not presume to instruct teachers — or parents, principals, administrators, and school boards — in the details of their daily jobs or in the exact shape, sequence, and specialized content of their elementary school curricula. Again, *James Madison Elementary School* is not a monolithic program to be uniformly imposed or slavishly followed. Neither is it a statement of federal policy. The power to mandate an elementary school curriculum for American students does not belong to the federal government; the Department of Education is specifically prohibited by statute from exercising direction, supervision, or control over the curriculum or program of instruction of any school or school system.

I would have it no other way. This book contains my views on an

important matter. But it remains a matter best left for final decision to state, local, and private authorities. They know their own requirements and problems. Though the curriculum described and advocated in this document reflects the quality and character of numerous real-world models, it is intended more broadly as a statement of goals and as an outline of one means to achieve them.

Obstacles and Opportunities

Other recipes for educational excellence exist, of course, and some readers may prefer a blend of ingredients different from the one I use here. But by whatever precise steps it is achieved, all Americans want success from their schools. And most Americans agree, I believe, about what school success looks like — about what our children should learn.

We want our students — by the end of 8th grade — to read, write, and speak clear and grammatical English, and to be acquainted with the varieties and qualities of fiction and nonfiction literature. We want them to know the essential features of American and world history, the major landscapes and nations of the Earth, and the rights and obligations that belong to citizens of the United States. We want them to be proficient in arithmetic and geometry, and familiar with basic principles of algebra. We want them to have begun exploring biology, chemistry, physics, and a foreign language; to have investigated the history and practice of art and music; and to have developed the habits of health, fitness, and athletic fair play. In short, we want our elementary school graduates to be fully prepared for serious and challenging study in high school.

These are eminently reasonable goals, and no magically ambitious curriculum is required to accomplish them. *James Madison Elementary School* is not an idle daydream; I propose it with confidence and optimism. I have seen thousands of ordinary American students over the years. They are ready. And as Secretary of Education, I have talked to hundreds of American educators, elected officials, and parents. They do not want to wait. *James Madison Elementary School,* one superintendent has written me, "reflects what must serve as the core curriculum for contemporary elementary schools."

In fact, instructional programs combining many of its elements and ideas are now being used in a number of places around the country. Profiles of seven excellent schools appear in this document. On the surface, at least, they are vastly different enterprises. They serve rural Oklahoma and inner-city Chicago, suburban San Jose and a fishing

village on the Washington State-Canadian border. They are organized in varied grade spans. They employ both standard and specialized teaching methods and emphases. And their students come from every walk of American life — from every degree of comfort and disadvantage; from black, white, Hispanic, Asian, and Native American homes.

But for all their differences, these schools are alike in one most important respect. They are all devoted to quality and content — and they all work. They prove that despair over disadvantaged and minority school children is faithless and false — that there is, in fact, no broad class of American students to whom the time-tested principles of good education do not and cannot apply. These schools remind us that true educational opportunity must involve equal intellectual challenge in the classroom. They show that a broad, deep, and effective core curriculum is possible for almost all American elementary school students. And these schools suggest that almost any American elementary school might adopt and refine a similar program of solid learning.

True, it may take work. And it won't always be easy work at that. For one thing, the curricular material described in this book may require more time to teach than many American schools now have, operating as they do on a significantly shorter daily and annual calendar than those employed in most other industrialized countries. For another, some teachers — trained as generalists at teachers' colleges that too often overlook the importance of in-depth subject-matter knowledge — may need help making the transition to more rigorous, content-based instruction. Then, too, strengthened curricula may make necessary the production of markedly better school textbooks than are currently available, or the imaginative use of a wider variety of alternative materials in the meantime.

These are serious problems that any proposed elementary core curriculum must acknowledge and face head-on. But they are not intractable problems, and no educational wheel must be reinvented before we can fashion solutions to them. Take learning time, for example. Harold Stevenson of the University of Michigan reports that American 5th-graders spend only 64 percent of their school time on academic activities. Japanese children, by comparison, spend 87 percent of their school hours on academics, and Chinese children get more instruction still. These figures are no blueprint for radical restructuring of American education. They suggest instead that our schools can make significantly better use of the teaching time they already have, and by simple and obvious means. They can avoid cutting into classroom minutes for public address announcements and staff meetings. They

can make regular homework assignments that turn evening hours into an extension of the daily schedule. And they can reduce the burdensome clerical and monitoring duties that keep many teachers away from their students.

The substance of my argument is this: if changes are needed to realize curricular improvements for our children and their schools, so be it — we should make them. If new laws or textbooks seem advisable, we should get them. If more and better teachers or principals are called for, we should find them. Reforms and innovations designed to achieve these ends are now being successfully implemented in various schools, communities, and states. And they can be replicated in most, quite possibly all, of our 50 states, 15,700 school districts, and 81,000 elementary schools. Our children can indeed learn what they must. But it will not happen by chance or accident. Only through attention, effort, and resolve will we provide our children with the schools they deserve.

William J. Bennett
U.S. Secretary of Education

The Program in Brief: A Plan for Kindergarten through Grade 8

SUBJECT	KINDERGARTEN THROUGH GRADE 3	GRADES 4 THROUGH 6	GRADES 7 AND 8
ENGLISH	INTRODUCTION TO READING AND WRITING (phonics, silent and oral reading, basic rules of grammar and spelling, vocabulary, writing and penmanship, elementary composition, and library skills)	INTRODUCTION TO CRITICAL READING (children's literature; independent reading and book reports; more advanced grammar, spelling and vocabulary; and composition skills)	Grade 7: SURVEY OF ELEMENTARY GRAMMAR AND COMPOSITION Grade 8: SURVEY OF ELEMENTARY LITERARY ANALYSIS
SOCIAL STUDIES	INTRODUCTION TO HISTORY, GEOGRAPHY, AND CIVICS (significant Americans; explorers; native Americans; American holidays, customs, and symbols; citizenship; and landscape, climate, and mapwork)	Grade 4: U.S. HISTORY TO CIVIL WAR Grade 5: U.S. HISTORY SINCE 1865 Grade 6: WORLD HISTORY TO THE MIDDLE AGES	Grade 7: WORLD HISTORY FROM THE MIDDLE AGES TO 1900 Grade 8: WORLD GEOGRAPHY and U.S. CONSTITUTIONAL GOVERNMENT
MATHEMATICS	INTRODUCTION TO MATHEMATICS (numbers; basic operations; fractions and decimals; rounding; geometric shapes; measurement of length, area, and volume; bar graphs; and estimation and elementary statistics)	INTERMEDIATE ARITHMETIC AND GEOMETRY (number theory; negative numbers, percentages, and exponents; line graphs; the Pythagorean theorem; and basic probability)	*Two from among the following one-year courses:* GENERAL MATH; PRE-ALGEBRA; and ALGEBRA
SCIENCE	INTRODUCTION TO SCIENCE (plants and animals, the food chain, the solar system, rocks and minerals, weather, magnets, energy and motion, properties of matter, and simple experiments)	Grade 4: EARTH SCIENCE AND OTHER TOPICS Grade 5: LIFE SCIENCE AND OTHER TOPICS Grade 6: PHYSICAL SCIENCE AND OTHER TOPICS	Grade 7: BIOLOGY Grade 8: CHEMISTRY AND PHYSICS
FOREIGN LANGUAGE	[OPTIONAL]	INTRODUCTION TO FOREIGN LANGUAGE (basic vocabulary, grammar, reading, writing, conversation, and cultural material)	FORMAL LANGUAGE STUDY *Two years strongly recommended*
FINE ARTS	MUSIC AND VISUAL ART (songs, recordings, musical sounds and instruments, painting, craftmaking, and visual effects)	MUSIC AND VISUAL ART (great composers, musical styles and forms, elementary music theory, great painters, interpretation of art, and creative projects)	MUSIC APPRECIATION and ART APPRECIATION *One semester of each required*
PHYSICAL EDUCATION/ HEALTH	PHYSICAL EDUCATION AND HEALTH (body control; fitness; sports, games, and exercises; sportsmanship; safety; hygiene; nutrition; and drug prevention education)	PHYSICAL EDUCATION AND HEALTH (team and individual sports, first aid, drug prevention education, and appropriate sex education)	PHYSICAL EDUCATION AND HEALTH (strategy in team sports, gymnastics, aerobics, self-assessment for health, drug prevention education, and appropriate sex education)

SUBJECT DESCRIPTIONS

English

Elementary education is basic education, and no academic subject is more basic than English. All American children must learn to read, write, and speak our common language well. And helping them do it is our schools' paramount responsibility. How are they performing this most important of all teaching tasks?

There's good news and bad. The reading skills of American 9- and 13-year-olds have markedly improved since the early 1970s, to an overall level that the National Assessment of Educational Progress (NAEP) calls "a considerable national achievement." General student writing skills have also improved over the last few years. But despite these advances, a closer look at the most recent NAEP data reveals persistent problems. In reading comprehension, more than 6 percent of our 9-year-olds (about 184,000 students) still lack even rudimentary skills, and almost 40 percent of our 13-year-olds (about 1,328,000 students) haven't acquired intermediate-level skills; both groups are at particular risk of future academic failure. National progress in student writing is incomplete, too. Given NAEP's easiest analytic writing assignment — a compare-and-contrast exercise about two different kinds of food — 98 percent of 4th-graders and more than 80 percent of 8th-graders are unable to prepare adequate responses.

So all in all, we're doing better, but we need to do far better still. Where should we start? First of all, we need to spend more time on the job. Children's language abilities don't develop in isolation, of course; they take practice. Too many of our students aren't getting much. Almost half of all 4th-graders and more than one-third of all 8th-graders report receiving two or fewer writing assignments in a 6-week period — in all academic subjects combined, not just in English. According to *Becoming a Nation of Readers*, the 1985 report of the Commission on Reading, the average American primary school student reads silently to himself for only 7 or 8 minutes each day. That's not enough work. Our children's reading and writing skills need more exercise.

They also need better material to exercise with. The Commission on Reading has reported that most language-arts instruction in our schools — up to 70 percent — consists of simple "seatwork": fill-in-the-blank workbook exercises that rarely require or encourage the

development of significant comprehension or composition skills. What's more, the basal textbooks around which much elementary school reading and writing work is organized too often undermine children's respect for English as a subject — and for language as an art. In our well-meaning effort to produce early reading texts with appropriate and sequential degrees of difficulty we have far undershot the mark. As often as not, our schoolbooks' "stories" have no plots, their prose has no poetry, and their vocabulary is unnecessarily infantile. Researcher Harriet Tyson-Bernstein has discovered, for example, that the word "because" usually doesn't appear in American textbooks until the 8th grade.

Books should expand students' horizons, not restrict them. As child psychologist Bruno Bettleheim suggests, "The acquisition of skills, including the ability to read, becomes devalued when what one has learned to read adds nothing of importance to one's life." In other words, kids won't read if their books are dull. Language-arts instruction in elementary schools can and should incorporate — at every grade level — a good deal of imaginative, compelling, and challenging literature.

To our youngest students, good stories offer fresh vocabulary, practice in listening, basic cultural knowledge, and above all the sense that reading can be fun. And for older students, literature becomes even more important. Around 4th grade, the course content of other academic subjects begins to require more advanced reading skills and their earnest application. Upper-grade students are no longer just "learning to read" — they are "reading to learn." That means that they must acquire the habit of reading for its own sake. And at this point, workbook exercises become less and less useful. In fact, they tend to kill interest in reading for all but the most motivated of our students. Research by Harvard University's Jeanne Chall and others indicates a "4th-grade slump" in national reading comprehension. Good books — real literature — would do a lot to help turn it around.

The *James Madison Elementary School* English curriculum describes a carefully sequenced and comprehensive program of language-arts instruction from kindergarten through grade 8. Reading begins with kindergarten phonics and then adds appropriate elements of grammar, vocabulary, and literary interpretation as children progress from grade to grade. Writing begins in 1st grade with basic handwriting, spelling, and syllabication, and proceeds to include regular creative, analytic, and informative student exercises. Classroom speaking is an important part of every year's work. And organized library visits in grades 1 through 6 encourage the development of essential research

skills — and a love of books.

Which books? No one standard syllabus of elementary readings can or should be established for all American schools. Each school has its own character and its own students; each must choose its own books to match them. But classic children's literature — the books our students and teachers have long treasured and valued — should not be ignored. *James Madison Elementary School* offers a list of recommended readings at three ranges of substance and complexity: kindergarten through grade 3, grades 4 through 6, and grades 7 and 8. In the early years, these or other books of comparable quality should be used to supplement more detailed classroom reading instruction. By the middle years, such books should increasingly replace seatwork as the focus of most reading and writing work. By grades 7 and 8 — except in unusual circumstances — literature should form the basis of school English classes.

Kindergarten

Preparation for reading and writing. Elementary phonics is introduced and letter-sound associations are emphasized. A significant part of each day is devoted to teacher-directed storytime, which stimulates students' interest in reading and gives them an opportunity to experience and discuss various forms of imaginative literature: fables, fairy tales, poems, short stories, and nursery rhymes. Teachers' transcriptions of student stories provide first experiences with the process of writing. Students are introduced to the school library, where they learn its layout and rules, and the proper care of books.

Grade 1

Phonics instruction continues, integrated with a carefully designed program of reading and writing. Students build vocabulary while they read — silently and aloud — a variety of stories, poetry, fairy tales, folktales, and legends. Grammar is introduced: nouns, verbs, and their agreement; elementary rules of punctuation and capitalization; and simple sentence structure. Instruction in writing begins and includes attention to the alphabet, handwriting, spelling, syllabication, and the reinforcement of grammatical lessons through short writing assignments (sentences, story summaries, and creative and descriptive exercises). Students visit the library regularly and borrow books for independent reading.

Grade 2

Phonics instruction is completed and students begin to read silently for longer periods of time. Group reading of imaginative literature emphasizes the development of interpretive skills: making generalizations, drawing inferences, and determining character motivation and plot sequence.

Vocabulary and spelling work is done both in the context of readings and in isolation. Instruction in grammar covers word order, pronouns and their antecedents, adjectives, contractions, and possessives. Cursive writing is introduced, and student writing assignments include stories, poems, letters, and simple book reports. Children have frequent opportunities to share their reading and writing with classmates. During library visits, students learn to identify books by their titles, authors, and illustrators.

Grade 3

Students expand vocabulary and comprehension skills while they read and discuss various literary forms: fables, legends, poems, plays, and nonfiction articles. Reading work includes exercise in choral speaking to allow children to refine their oral language abilities. Grammatical instruction covers subject and predicate rules and the function of adverbs. Attention to spelling and penmanship continues. Lessons in writing emphasize formal process (outlining, drafting, revising, and editing) and more advanced compositional skills: word selection (synonyms, antonyms, and homonyms); detailing; and paragraphing. Independent reading and writing are a significant part of each day. At the library, students learn basic reference skills with tables of contents, indexes, atlases, dictionaries, encyclopedias, and the card catalog.

A good selection of readings for children in kindergarten through grade 3 might include:

Behind the Back of the Mountain: Black Folktales from Southern Africa, Verna Aardema
Aesop for Children, Aesop
Hans Christian Andersen's Fairy Tales, Hans Christian Andersen
Anno's Alphabet and *Anno's Counting House,* Mitsumasa Anno
Wiley and the Hairy Man, Molly Bang
Once in Puerto Rico, Pura Belpre
Madeline books, Ludwig Bemelmans
The Three Billy Goats Gruff, Susan Blair
Freddy the Detective, Walter R. Brooks
The Pied Piper of Hamelin, Robert Browning
The Story of Babar, the Little Elephant, Jean de Brunhoff
Mike Mulligan and His Steam Shovel and *The Little House,* Virginia Lee Burton
The Very Hungry Caterpillar, Eric Carle
Jack and the Three Sillies, Richard Chase
The Ramona and Henry Huggins books, Beverly Cleary
Adventures of Pinocchio, Carlo Collodi
Chanticleer and the Fox, Barbara Cooney
The Courage of Sarah Noble, Alice Dalgliesh
Book of Nursery and Mother Goose Rhymes, Marguerite De Angeli
Drummer Hoff, Barbara Emberley
Ask Mister Bear, Marjorie Flack

Readings for kindergarten through grade 3, continued.

The Whipping Boy, Sid Fleischman
Millions of Cats, Wanda Gag
The Three Bears, retold by Paul Galdone
Stone Fox, John Reynolds Gardiner
Grimm's Fairy Tales, Jacob and Wilhelm Grimm
The Wonder Book, Nathaniel Hawthorne
One Fine Day, Nonny Hogrogrian
Little Red Riding Hood, retold by Trina Schart Hyman
John Henry: An American Legend and *The Snowy Day,* Ezra Jack Keats
Pecos Bill, Steven Kellogg
Just So Stories, Rudyard Kipling
The Arabian Nights and *Aladdin and the Wonderful Lamp,* Andrew Lang
Piping Down the Valley Wild, Nancy Larrick
The Story of Ferdinand, Munro Leaf
Pippi Longstocking books, Astrid Lindgren
Swimmy, Leo Lionni
Frog and Toad Together, Arnold Lobel
Mrs. Piggle-Wiggle, Betty MacDonald
Make Way for Ducklings and *Blueberries for Sal,* Robert McCloskey
Every Time I Climb a Tree, poems by David McCord
Anansi the Spider: A Tale from the Ashanti, retold by Gerald McDermott
When We Were Very Young and *Winnie-the-Pooh,* A. A. Milne
Amelia Bedelia, Peggy Parish
Cinderella, Charles Perrault
The Tale of Peter Rabbit, Beatrix Potter
Ride a Purple Pelican and *Read Aloud Rhymes for the Very Young,* Jack Prelutsky
Clementine and *She Be Comin' 'Round the Mountain,* Robert Quackenbush
Curious George books, H. A. Rey
The Dancing Stars: An Iroquois Legend, Anne Rockwell
Where the Wild Things Are and *Chicken Soup with Rice,* Maurice Sendak
The Cat in the Hat, Green Eggs and Ham, Horton Hatches the Egg, and others by Dr. Seuss
Caps for Sale, Esphyr Slobodkina
Noah's Ark, Peter Spier
Abel's Island and *Sylvester and the Magic Pebble,* William Steig
A Child's Garden of Verses, Robert Louis Stevenson
East O' the Sun and West O' the Moon, Gudrun Thorne-Thomsen
Brian Wildsmith's Illustrated Bible Stories, Philip Turner
Alexander and the Terrible, Horrible, No Good, Very Bad Day, Judith Viorst
Ira Sleeps Over, Bernard Waber
Charlotte's Web and *Stuart Little,* E. B. White
Little House books, Laura Ingalls Wilder
The Velveteen Rabbit, Margery Williams
Crow Boy, Taro Yashima
Owl Moon and *The Seeing Stick,* Jane Yolen
Rumpelstiltskin, retold by Paul O. Zelinsky

Grade 4

An introduction to critical reading, with selections from classic children's literature: adventure and animal stories, fables, legends, myths, and tall tales. Students identify story structure, examine cause-effect relationships, and distinguish fact from fiction. Topics in grammar include compound subjects and predicates, and verb tenses. Spelling work introduces etymology as a tool. Students continue to refine handwriting and vocabulary. Writing assignments emphasize the construction of introductions and conclusions in creative and expository composition, and introduce more advanced techniques like summarization and dialogue. Independent reading and writing are a significant part of each day. Students use library visits to prepare written and oral book reports.

Grade 5

A continued introduction to critical reading, with selections from a variety of new and familiar genres and styles: short stories, essays, plays, short novels, and biographies. Students investigate plot and characterization in detail, interpret figurative speech and conditional statements, and distinguish stated and implied main ideas. Grammatical lessons include inverted word order, direct and indirect objects, conjunctions, prepositions, and prepositional phrases. Written work emphasizes research skills and revision, and students are expected fully to apply their knowledge of grammar, spelling, and vocabulary to final drafts. Speaking exercises require students to deliver a short original talk before their classmates. Independent reading and writing are a significant part of each day. Students continue to use library visits to prepare written and oral book reports.

Grade 6

A review of reading skills developed in the early grades, and an introduction to classical mythology and simple lyric, narrative, and dramatic poetry. Reading selections serve as subjects for a variety of writing assignments, including short essays, narratives, letters, and book reviews. Speaking exercises require students to memorize and recite selected short poems. Students hone library skills (bibliographies and note-taking) during preparation of a research project. Topics in grammar include irregular verbs and the subjunctive mood. Independent reading and writing are a significant part of each day.

A good selection of readings for children in grades 4 through 6 might include:

Born Free, Joy Adamson
Little Women, Louisa May Alcott
Sounder, William H. Armstrong
Tuck Everlasting, Natalie Babbitt
Peter Pan, J. M. Barrie

Readings for grades 4 through 6, continued.

Crickets and Bullfrogs and Whispers of Thunder: Poems and Pictures, Harry Behn
Stories of the Gods and Heroes, Sally Benson
Sundiata: The Epic of the Lion King, Roland Bertol
The Dog Days of Arthur Cane, T. Ernesto Bethancourt
Doctor Coyote: A Native American Aesop's Fables, retold by John Bierhorst
The Secret Garden, Frances Hodgson Burnett
The Summer of the Swans, Betsy Byars
A New Treasury of Children's Poetry: Old Favorites and New Discoveries, edited by Joanna Cole
Prairie Songs, Pamela Conrad
James and the Giant Peach and *Charlie and the Chocolate Factory,* Roald Dahl
The Black Stallion, Walter Farley
Thor and the Giants, Anita Feagles
Great Brain books, John D. Fitzgerald
Harriet the Spy, Louise Fitzhugh
Johnny Tremain, Esther Forbes
Selections from *Poor Richard's Almanack,* Benjamin Franklin
Lincoln: A Photobiography, Russell Freedman
And Then What Happened, Paul Revere?; What's the Big Idea, Ben Franklin?; and *Where Was Patrick Henry on the 29th of May?,* Jean Fritz
A Swinger of Birches: Poems of Robert Frost for Young People, Robert Frost
Julie of the Wolves, Jean Craighead George
The Wind in the Willows, Kenneth Grahame
Mythology, Edith Hamilton
The People Could Fly: American Black Folk Tales, Virginia Hamilton
Misty of Chincoteague and *Brighty of the Grand Canyon,* Marguerite Henry
At the Top of My Voice and Other Poems, Felice Holmon
The Phantom Tollbooth, Norton Juster
The Trumpeter of Krakow, Eric Kelly
The Jungle Book and *Captains Courageous,* Rudyard Kipling
Lassie Come-Home, Eric Knight
From the Mixed-Up Files of Mrs. Basil E. Frankweiler, E. L. Konigsburg
Tales from Shakespeare, Charles and Mary Lamb
The Rainbow Fairy books, Andrew Lang
A Wrinkle in Time, Madeleine L'Engle
The Lion, the Witch, and the Wardrobe, C. S. Lewis
The Call of the Wild, Jack London
Castle and *Cathedral,* David Macaulay
Sarah, Plain and Tall, Patricia MacLachlan
Paul Bunyan Swings His Axe, Dell J. McCormick
Snow Treasure, Marie McSwigan
The Borrowers, Mary Norton
Hailstones and Halibut Bones, poems by Mary O'Neill
Bridge to Terabithia and *The Great Gilly Hopkins,* Katherine Paterson
Tales of Mystery and Imagination, Edgar Allan Poe

Readings for grades 4 through 6, continued.

The Merry Adventures of Robin Hood, Howard Pyle
The Westing Game, Ellen Raskin
Where the Red Fern Grows, Wilson Rawls
Bambi, Felix Salten
Abe Lincoln Grows Up and *Rootabaga Stories,* Carl Sandburg
Cricket in Times Square, George Selden
Black Beauty, Anna Sewell
A Day of Pleasure: Stories of a Boy Growing up in Warsaw, Isaac Bashevis Singer
Call It Courage, Armstrong Sperry
Heidi, Johanna Spyri
Treasure Island, Robert Louis Stevenson
American Tall-Tale Animals, Adrien Stoutenburg
The Nutcracker: A Story and a Ballet, Ellen Switzer
Swiss Family Robinson, Johann Wyss

Grade 7

A thorough survey of elementary grammar and composition. Students diagram sentences; review the parts of speech and the structure of sentences; learn the active and passive voices; and study verbals (infinitives, participles, and gerunds), independent clauses, and subordinate clauses. Readings in literature serve as models of good writing and as subjects for students' own frequent writing exercises, including short essays, book reviews, and a research paper. Instruction in composition covers topic sentences, supporting ideas, transitions, varied sentence structure, conclusions, and the development of individual style. Students are given continued experience in classroom speaking and use of the library.

Grade 8

A survey of elementary literary analysis. Students read, discuss, and interpret a careful selection of novels, short stories, essays, plays, and poetry. Classwork emphasizes close reading of each work for theme, style, point of view, plot, setting, character, mood, irony, and imagery. Readings serve as models of fine composition and as subjects for writing assignments that stress a mastery of elementary vocabulary, grammar, usage, mechanics, description, persuasion, narration, and exposition. Students are given continued experience in classroom speaking and use of the library.

A good selection of readings for children in grades 7 and 8 might include:

I Know Why the Caged Bird Sings, Maya Angelou
The Voyage of the Lucky Dragon, Jack Bennett

Readings for grades 7 and 8, continued.

A Gathering of Days: A New England Girl's Journal, 1830-32, Joan W. Blos
The Moves Make the Man, Bruce Brooks
Alice's Adventures in Wonderland and *Through the Looking Glass*, Lewis Carroll
Neighbor Rosicky, Willa Cather
The Dark is Rising, Susan Cooper
The Red Badge of Courage, Stephen Crane
Madame Curie: A Biography, Eve Curie
Robinson Crusoe, Daniel Defoe
Great Expectations, Charles Dickens
I'm Nobody! Who are you?, Emily Dickinson
Adventures of Sherlock Holmes and *The Lost World*, Arthur Conan Doyle
The Count of Monte Cristo and *The Three Musketeers*, Alexandre Dumas
My Family and Other Animals, Gerald Durrell
The Fun of It: Random Records of My Own Flying and of Women in Aviation, Amelia Earhart
The Refugee Summer, Edward Fenton
Washington: The Indispensable Man, James Thomas Flexner
Diary of a Young Girl, Anne Frank
You Come Too, Robert Frost
Spin a Soft Black Song, Nikki Giovanni
A Raisin in the Sun, Lorraine Hansberry
The House of Seven Gables, Nathaniel Hawthorne
The Old Man and the Sea, Ernest Hemingway
The Gift of the Magi and Other Stories, O. Henry
Kon-Tiki, Thor Heyerdahl
Legend Days, Jamake Highwater
Thunder of the Gods, Dorothy Hosford
The Legend of Sleepy Hollow and *Rip Van Winkle*, Washington Irving
Story of My Life, Helen Keller
Kim, Rudyard Kipling
To Kill a Mockingbird, Harper Lee
Good Night, Mr. Tom, Michelle Magorian
Mutiny on the Bounty, Charles Nordhoff and J. N. Hall
Island of the Blue Dolphins, Scott O'Dell
The Scarlet Pimpernel, Baroness Emma Orczy
The Complete Tales and Poems, Edgar Allan Poe
The Chosen, Chaim Potok
The Yearling, Marjorie Kinnan Rawlings
The Light in the Forest, Conrad Richter
The Little Prince, Antoine de Saint-Exupéry
Early Moon, Carl Sandburg
Shane, Jack Schaefer
Ivanhoe, Sir Walter Scott
Plays and sonnets, William Shakespeare
Frankenstein, Mary Shelley
Upon the Head of the Goat, Aranka Siegal

Readings for grades 7 and 8, continued.

The Red Pony and *The Pearl*, John Steinbeck
The Strange Case of Dr. Jekyll and Mr. Hyde, Robert Louis Stevenson
Roll of Thunder, Hear My Cry, Mildred Taylor
A Connecticut Yankee in King Arthur's Court and *The Adventures of Tom Sawyer*, Mark Twain
Journey Home, Yoshiko Uchida
The Story of Mankind, Hendrik Van Loon
20,000 Leagues Under the Sea, Mysterious Island, and *Around the World in Eighty Days*, Jules Verne
Up From Slavery, Booker T. Washington
The Time Machine, H. G. Wells
Ethan Frome, Edith Wharton
The Sword in the Stone and *The Once and Future King*, T. H. White
The Bridge of San Luis Rey, Thornton Wilder
The Virginian, Owen Wister
Dragonwings, Laurence Yep

Meridith Magnet Elementary School
Temple, Texas

In Central Texas, a 5th-grade classroom has been transformed into the deck of a pirate ship, complete with broken barrels, skull and crossbones, and gold ducats. That's how students at Meridith Magnet Elementary prepare to begin Robert Louis Stevenson's *Treasure Island.* Whether the book is *Charlotte's Web, Misty of Chincoteague,* or *Robin Hood,* the teachers at this school bring an enthusiasm to their classrooms that makes children savor the experience of reading good literature. "We teach children to love books," explains principal Bonnie Martin.

In fact, Meridith teaches its 540 3rd-, 4th-, and 5th-graders to love learning. That's why the school, located in one of the poorest sections of Temple, is nevertheless able to attract students from some of the wealthiest neighborhoods in its district. The student body is a mix of white, black, and Hispanic children, and four out of ten of them come from disadvantaged homes. The school itself is bordered on three sides by federal housing projects, and the fourth side is flanked by an open field where stray cattle often wander. As a recent Department of Education visitor noted, Meridith is "an oasis" where students of all backgrounds come to benefit from the school's sound and challenging academic program.

Every school day begins with a silent period during which students read from a book of their choice. All of them carry the book with them throughout the day in case they have a spare moment to read a few more pages. Two hours a day are devoted to reading and writing instruction, and students regularly work at the school's reading lab. Given this emphasis on reading, it was no surprise to Meridith teachers that 97 percent of their 5th-grade students showed they had mastered necessary reading skills in a recent statewide test. The average score among all Texas schools was a full 18 percentiles lower.

The same thorough, daily instruction characterizes Meridith's math, science, social studies, fine arts, and physical education programs. Students in small groups compete to solve arithmetic problems in a "Math Olympics." On Science Night, they take part in any of the 150 different experiments that are performed for parents. In social studies classes, students learn about citizenship and American history through songs and readings. And in fine arts, the study of music history and

theory culminates in the production of an annual musical; every student in every grade takes part.

Around the halls of Meridith, Principal Martin is a familiar and welcome figure. She makes sure that students are well-behaved by posting the rules of conduct in every classroom and enforcing those rules fairly and consistently. But she also knows how to give praise with a touch on the shoulder or a word of encouragement. It works. Students rarely miss a day of school and regularly complete and present their homework in special spiral notebooks they've been given. The hallways and classroom walls are covered with displays of their art and writing, reminding everyone that good work brings with it a sense of accomplishment. Says one student: "At Meridith, we can even learn from the walls."

Social Studies: History, Geography, and Civics

More than half of 300,000 California 8th-graders tested in 1986 chose "The buck stops here" or "Walk softly and carry a big stick" as the phrase that best describes the political system outlined in the U.S. Constitution. "A government of laws, not men" was the correct answer. When the Dallas *Times-Herald* recently measured the geographical knowledge of 12-year-olds from eight industrialized nations, more than one-fifth of the students in one American test group couldn't find the United States on a map. Almost that many thought it was Brazil.

Such stories have become a sorry commonplace of American education in recent years. Too many of our children are unfamiliar with the most basic facts and ideas of history, geography, and civics. What's the trouble? Disappointment with educational outcomes can usually be blamed on things that happen in our schools: not enough homework, poor textbooks, slack standards of assessment, or low expectations of students, for example. But with social studies — more than with any other academic subject — our biggest problem is preliminary to the classroom. It lies in conception, planning, and design — in the overall content and sequence of instruction. Simply put, in the words of one prominent educational researcher, social studies is the "great dismal swamp of today's school curriculum."

It's a swamp from which few of our elementary schools manage to escape; with remarkably little variation across states and school districts, according to research by historian Diane Ravitch, there is a *de facto* national curriculum in the social studies. Children in kindergarten through 3rd grade study themselves and their families, neighborhoods, and communities. Children in 4th grade study state history. Children in 5th grade study American history through the Civil War. Grades 6 and 7 typically emphasize world cultures and world geography. And 8th-grade classes return to American history, often covering the same 5th-grade material — and not much else.

This program has obvious flaws. In grades 4 through 8 it follows no logical disciplinary or chronological progression. Its two years of American history are three grades apart. Its two years of world culture and geography are similarly isolated from complementary classes that may be taught in high school. Such discontinuity obscures connections of time and idea that are important to a rich understanding of history, geography, and civics, giving too many students the false im-

pression that these subjects are merely an odd jumble of unrelated dates, places, and processes.

Worse still is the kindergarten through 3rd-grade curriculum, four years of instruction which rarely seek to extend children's horizons beyond their own home towns. According to a 1983 report by the National Council for the Social Studies, the field's principal professional organization, kindergarten should (and does) cover "Awareness of Self in a Social Setting." Grade 1 becomes "The Individual in Primary Social Groups: Understanding School and Family Life." Grade 2 focuses on "Meeting Basic Needs in Nearby Social Groups: The Neighborhood." And grade 3 emphasizes "Sharing Earth-Space with Others: The Community."

This nearly content-free program — known as "expanding environments" — is now more than 50 years old. It dates from the 1930s, when educators were convinced that the Depression made early study of the past frivolous and irrelevant, and that young students should instead be taught about the complex of social forces that had produced their families' plight. But despite the fact that its original rationale has long since evaporated, expanding environments still has its advocates and defenders. They argue on two fronts: first, that immersion in familiar particulars of local life builds children's academic self-confidence and esteem; and second, that — for reasons of cognitive and developmental psychology — our youngest students are not yet ready for real history, geography, or civics.

Neither claim is true. Professor Ravitch has amassed an impressive collection of expert testimony on expanding environments — all of it negative. Joseph Adelson, professor of psychology at the University of Michigan, confirms that "there is nothing in cognitive science, or in developmental research, which supports the present way of doing things." Jerome Bruner of the New School in New York City agrees: "There is little beyond ideology to commend the program and its endlessly bland versions," he says. Philip Phenix, educational philosopher and professor emeritus at Teachers College of Columbia University, calls expanding environments positively "ill-suited to the needs of young children," "wholly without warrant," and "a recipe for boredom and sterility, doing poor justice to the expansive capacities of the human mind."

In a 1980 national survey, only 3 percent of American 9-year-olds named social studies their favorite subject. It seems a low priority for teachers, too; most research suggests that they spend only minutes a day on social studies. It's time for a change.

Although young children may not be prepared to absorb sophisti-

cated causal explanations of our world's complicated past and present, most of them come to kindergarten already aware — through television and other media — of people and places far beyond the streets between home and school. And they are ready and eager to have their enormous appetite for further information satisfied. The *James Madison Elementary School* social studies curriculum offers students early, continuous, and cumulative instruction in history, geography, and civics.

In the first few years of school the program teaches history as a good story, with myths, legends, folktales, biographies of famous men and women, and initial lessons in basic beliefs and traditions of our own and other societies and cultures. Geography is taught first through active learning techniques — play, games, and map making exercises — and later through more direct instruction about topography, cartography, and world explorers. Civics education begins with symbols of American democracy and nationhood and continues with simple descriptions of our political and legal system, the rights and responsibilities of its citizens, and the root ideas which give it life.

By the end of 3rd grade, students have met heroes and villains, seen triumphs and tragedies, and learned about the United States and foreign countries. They know what the ice caps are, how the rivers flow, and where the immigrants came from. They understand how a legislature works, who their representatives are, and why democracy is good. In other words, they possess the general vocabulary of knowledge and skills that is necessary for more formal study of history, geography, and civics in later years.

The *James Madison Elementary School* program begins in 4th grade to organize students' knowledge of the social studies within explicit chronological and disciplinary boundaries. Grades 4 and 5 describe a two-year sequence of American history, from early settlement to the present day. Grades 6 and 7 describe a similar two-year sequence of world history, from prehistoric times through the 19th century. The curriculum concludes in 8th grade with half-year courses in American constitutional government and world geography.

Kindergarten

Preparation for history, geography, and civics. Historical understanding is encouraged by a focus on important holidays and the individuals or groups they celebrate. Geography lessons begin with identification of home and school address and routes between the two, and include the names of com-

munity, state, and nation. Students are taught elementary concepts of distance and direction, the globe as a model of the Earth, and simple map making exercises. Initial citizenship education concerns the importance of school rules; the value of honesty, fair play, hard work, and the Golden Rule; the meaning and importance of the American flag; memorization and understanding of the Pledge of Allegiance; and identification of the President, the White House, and the nation's capital in Washington.

Grade 1

Historical instruction includes attention to American customs through study of traditional and patriotic songs, legends, and folktales; lessons about daily life in the American past; and a unit on the beliefs, traditions, and geography of a foreign country. Other lessons in geography teach students to give and follow simple directions; to identify common landforms; and to trace initial connections among landscape, climate, land use, transportation, and commerce. Civics instruction encourages good character through stories about moral problems and their solutions; develops individual responsibility through assignment of classroom chores; identifies familiar American symbols (the bald eagle, the Liberty Bell, the Statue of Liberty, the Capitol, and Uncle Sam); and briefly describes the Constitution and Bill of Rights.

Grade 2

Students expand their understanding of the past through study of the lives and accomplishments of important American leaders (e.g., George Washington, James Madison, Abraham Lincoln, Susan B. Anthony, and Martin Luther King, Jr.) and famous scientists and inventors (e.g., Benjamin Franklin, the Wright Brothers, Henry Ford, Thomas Edison, Alexander Graham Bell, and George Washington Carver). Timelines are used to promote a more concrete understanding of past, present, and future. Where appropriate, students explore their own family backgrounds and discuss the customs, beliefs, and geography of their ancestors' homelands. Further geography instruction teaches students to recognize cardinal directions, map symbols, and physical and cultural distinctions among urban, suburban, and rural areas. Civics instruction focuses on the duties and privileges of citizenship, and voting and elections.

Grade 3

History lessons explore the culture, beliefs, and daily life of selected Native American peoples. Students learn about Columbus, the impact of European settlers' arrival, the influence of Native American traditions on contemporary society, and the location of major Indian tribes and settlements on maps. Additional instruction in geography focuses on the travels and adventures of such significant explorers as Marco Polo, the Vikings, Sir Francis Drake,

Balboa, Daniel Boone, Henry Hudson, Lewis and Clark, and Admiral Peary. As they trace the explorers' paths, students refine their map- and globe-reading skills, identifying latitude, longitude, the equator, the continents, the oceans, the hemispheres, and the poles. Civics instruction examines the Massachusetts and Virginia settlements, and their ideas about religious tolerance and local government.

Grade 4

Major topics in American history and culture from early settlement to the Civil War, taught through story and textbook readings. Students study the French, Dutch, Spanish, and English settlers; daily life in the colonies; the Declaration of Independence and the American Revolution; the Constitutional Convention; the Louisiana Purchase and westward expansion; the growth of canals and railroads; and sectional differences preceding the Civil War. Where possible, local and state developments are highlighted. Map work identifies the 13 colonies, and follows westward migration and national expansion to the Pacific. Civics covers the functions of the three branches of government, the two-party system, and constitutional issues surrounding slavery.

Grade 5

Major topics in American history and culture from the Civil War to the present, taught through story and textbook readings. Students study events leading to the Civil War; slavery and abolition; the war itself; Reconstruction; the industrial revolution; urbanization and immigration; World War I; the Great Depression and the New Deal; World War II; the Cold War; the civil rights movement; and the war in Vietnam. Where possible, local and state developments are highlighted. Students commit the 50 states and their capitals to memory. Map work identifies Union, border, and Confederate states; traces major military campaigns; and describes source countries of 19th-century immigration. Civics lessons address major constitutional issues and amendments, and examine democracy and its adversaries in the 20th century.

Grade 6

Major topics in world history and geography from prehistoric times to the Middle Ages, taught through story and textbook readings. Students study early man; ancient civilizations of the Near East, India, and China; classical Greece and Rome; the growth of Judaism and Christianity; the Byzantine Empire; Charlemagne; the rise of Islam; and early civilizations in Latin America and Africa. Map work traces the growth and decline of civilizations in the ancient world and follows the sea and land trade routes that facilitated the spread of civilization and contact among cultures. Work in civics explores the roots of democracy in the Greek city-state and their contemporary application to American government.

Grade 7

Major topics in world history and geography from the Middle Ages to 1900, through story and textbook readings. Students study feudal Europe, the Renaissance, the Reformation, the scientific revolution, exploration and colonialism, the Enlightenment, the French Revolution, parliamentary democracy in England, the industrial revolution, and the emergence of modern European states. Map work charts the expansion and decline of empires and follows the development of national political boundaries in Europe, Asia, Africa, and South America. Work in civics explores contributions to democracy made by European political thought, and its contemporary application to American government.

Grade 8

Students take both of the following half-year courses:

American Constitutional Government. Study of the U.S. Constitution and discussions of the political structures and principles it establishes: separation of powers, checks and balances, and republican government; duties of congressional representatives and their terms of office; the legislative process; congressional authority and its limits; national elections and the electoral college; the president and vice president, their terms of office, and their responsibilities; the system of federal courts, due process, and judicial review; and provision for amendments.

World Geography. Students identify, analyze, and compare physical and cultural characteristics of major world regions and major countries in each. Attention is given to international boundaries; capitals and principal cities; major landforms and bodies of water; climate, weather, and natural resources; transportation and communication; commerce and economy; population growth, decline, and shift; major races, languages, cultures, and religions; agriculture; and politics and government.

Miller Junior High School
West San Jose, California

It's the morning after election day. None of the three presidential candidates has won a majority in the electoral college. A decision must be made — not by the U.S. House of Representatives, but by Ted Yanak's 8th-grade American history and government class at Miller Junior High.

Exploring the intricacies of the American electoral process is just one way in which students at this Silicon Valley school become familiar with American democracy. For its 715 6th-, 7th-, and 8th-graders, learning about our national heritage is an integral part of every school day.

Each morning at Miller begins with the Pledge of Allegiance and the announcement of "This Day in History," a short description of a significant event in the American past. Two of the school's most prestigious honors, the History Award and the Constitution Award, are presented to students with the highest scores on a series of oral and written examinations. The Harry S Truman History Club — Miller's largest student organization — regularly sponsors discussions with elected officials from the area. And schoolwide assemblies held throughout the year honor American leaders and traditions. Mr. Yanak, California's 1980 Teacher of the Year, frequently makes a guest appearance at these events dressed in a bright red jacket, blue pants, red-white-and-blue shoes, a flag-print tie, and a tricolor hat. "We are proud to be a flag-waving school," says principal Andrew Garrido.

Miller should also be proud of its challenging curriculum. Two years each of math, social studies, science, English, and physical education are required, and more than one-third of the student body is enrolled in foreign language classes. A full quarter of each day is devoted to English, and students do an extensive amount of writing throughout the entire curriculum. More than half of the students are enrolled in classes operating at least a year-and-a-half above grade level, and four out of five will go on to college. In 1986, the school received the California Distinguished School Award. And in 1987, its achievement on the California Assessment Program test placed it among the top 20 of 1,500 intermediate schools in the state. No wonder teachers hear former students complain that after they've left Miller, high school coursework seems "just too easy."

Mr. Garrido points to what he calls the "magic triangle" — motivated

students, dedicated teachers, and supportive parents — as the key to Miller's success. And that triangle produces results: Miller's daily student attendance is 96 percent, its teachers rarely leave except to retire, and the results of district-wide surveys of parent satisfaction put the school in the 97th percentile. "These kids come here ready to learn," says principal Garrido. And the Miller staff keeps its part of the bargain, he adds. "This school owes those kids a good education."

Mathematics

After just a few years of elementary school there is already a striking difference in mathematics achievement between American children and their peers in other countries. In a 1986 study of 20 5th-grade classrooms in the United States, Japan, and China, for example, the average score of students in the highest ranking American class was lower than that of all but one Asian class. And by 8th grade, the United States trails far behind most of the developed world in math education. Last year, reporting on a 20-year update of its first International Mathematics Study, the International Association for the Evaluation of Educational Achievement ranked American 13-year-olds a poor 12th among students from 17 different countries. Japanese children outperformed Americans in every fundamental area — arithmetic, problem solving, statistics, measurement, geometry, and algebra — even though our 8th-graders spend more time studying math, and in far smaller classes at that. One prominent American mathematics researcher flatly called these results "appalling."

One source of trouble is a persistent "attitude gap." "Mathematics seems to be a weak third in the American triad of reading, writing, and arithmetic," says a recent University of Michigan report. Asked what single factor best explains math achievement, Japanese and Chinese parents are likely to say "hard work." That's the right answer, of course, but American parents seem not to believe it. Asked the same question, Americans are apt to name innate ability as the driving force behind mathematical skill, as though success or failure in math classes is more a matter of destiny than anything else. Most evidence suggests that this mistaken fatalism discourages our children from making the necessary effort toward command of basic math.

A still bigger problem, though, is the quality of mathematics instruction in our schools. From the earliest grades, Japanese math teachers typically linger over individual problems, carefully explaining their answers and why certain solutions work. Here, by contrast, our youngsters get quickly bogged down in workbooks full of repetitive calculations meant to reveal generally applicable "cookbook" solutions. In the short run, the American approach may actually cover more ground. But because we rarely pause to till that ground very thoroughly, it takes some students years to master the simplest concepts. Basic ideas about fractions are commonly introduced in 2nd or 3rd grade, for example, and then slowly expanded in tiny, incremental bits over many successive years. Along the way, precious time in each grade

must be spent reviewing previously covered material.

It's called a "spiral" technique and it plainly doesn't work. More than 80 percent of American students never get to algebra before they finish 8th grade, making it almost impossible for them to reach advanced material like calculus in high school. Worse yet, many of them lose interest in math altogether — and who can blame them? The elementary curriculum, dominated as it is by years of rudimentary arithmetic and geometry, is shallow and boring.

That has to change. We need more trained mathematicians in our businesses and professions, of course. But we also need millions of ordinary citizens with those qualities of mind that elementary school math can help to build: analytic spirit, deductive capacity, facility with problems and their solutions, and clarity of thought.

Winning our children back to mathematics is hardly an impossible task. As a subject of study, math has natural attractions. Well taught, math offers young students an intriguing blend of logic, precision, elegance, and practicality. Math instruction should stress thought, not just methodology and results. Story problems should be introduced early — not as a separate topic like multiplication, but as an indispensable tool of explanation and application. If students are given an opportunity to think about why math works — not simply how — they will see the subject for what it is: comprehensible, exciting, and eminently worthwhile.

The *James Madison Elementary School* mathematics program describes a topical, nonrepetitive sequence of study from kindergarten through 8th grade. From the start, story problems are used to reinforce and apply developing skills. And throughout, individual subjects and ideas are reviewed only as they apply to new knowledge, and build upon one another toward understanding of elementary math as a coherent whole. The program is designed to provide all students with a complete background in arithmetic and elementary geometry, along with an introduction to the language and territory of basic algebra. Those students who are ready to begin formal algebra in 8th grade are encouraged to do so.

Kindergarten

Students use woodblocks and other manipulatives to develop number sense and to count and compare the sizes of sets. They solve story problems that introduce simple addition and subtraction, classify objects, identify simple geometric shapes, and learn how to tell time.

Grade 1

Students learn to count, count back, and skip count; estimate and compare the sizes of sets; recognize geometric shapes in a variety of positions; measure and compare lengths; read simple bar graphs; solve story problems that involve addition and subtraction of one- and two-digit numbers; and are introduced to concepts of simple multiplication and division.

Grade 2

Students learn place value by grouping physical objects; round numbers to the nearest tens and hundreds; master simple addition and subtraction facts; estimate solutions to large-number addition and subtraction problems; solve story problems that involve multiplication and division facts; discuss coins and the money system; and are introduced to fractions. In geometry, students recognize properties of two- and three-dimensional shapes; classify models of plane and solid figures; and learn about edges, sides, and angles.

Grade 3

Students master the multiplication table; develop computational proficiency with two- and three-digit addition and subtraction, two- and three-digit by single-digit multiplication, and division with single-digit divisors; and solve story problems that involve whole number operations, fractions, mixed numbers, and decimals. Manipulatives are used throughout to extend concepts of place value to other bases; to add and subtract decimals; and to find equivalent fractions. In geometry and measurement, students learn units of length, area, volume, weight, and time; measure area and volume using squares and cubes; and interpret bar and picture graphs with units greater than one. Class projects involve the collection, display, and analysis of data, and include simple experiments in probability.

Grade 4

Students solve story problems that reinforce whole number operations and fraction and decimal concepts; use estimation and rounding to divide large numbers by two- and three-digit divisors; interpret line graphs; compute mean, median, and mode; and, where and when possible, organize and display graphs and data on computers. In geometry, topics include symmetry, congruence, and parallel and perpendicular lines; acute, right, and obtuse angles; and more advanced characteristics of polygons.

Grade 5

Students explore prime numbers, factors, multiples, the number line, negative numbers, and the concept of infinity; learn percentages and ratios using physical materials and representational models; identify and convert equivalent fractions and decimals; and study more complex probability prob-

lems using "hands-on" experiments. In geometry, students estimate angles and make protractor measurements; draw, measure, and compare triangles and quadrilaterals; and, where and when possible, use computer graphing software to model two- and three-dimensional shapes.

Grade 6

Students learn arithmetic and geometric series; the associative, commutative, and distributive properties of numerical expressions; exponents; square and cube root concepts; and basic functional relationships. Story problems involve percentages, ratios, negative numbers, and simple equations with variables. In geometry, topics include the relations among length, area, and volume; features of circles, cylinders, spheres, and cones; the Pythagorean theorem and the angle-sum theorem; and model construction of the regular polyhedra.

Grades 7 and 8

Students take two of the following three full-year courses in sequence, beginning where appropriate with either General Math or Pre-Algebra:

General Math. A thorough review of basic topics in arithmetic and geometry, and their various applications.

Pre-Algebra. Students learn rational and negative exponents; scientific notation; Euclid's algorithm; factorization of linear expressions; and basic principles of formal logic. Story problems involve fractions and decimals; ratio, proportion, and percentage; the order of operations; and linear equations and inequalities. The Cartesian plane is introduced and used to solve problems of location and distance.

Algebra. Students solve quadratic equations by factoring, completing the square, and applying the quadratic formula, and they use substitution and matrices to solve systems of linear equations. Algebraic modeling is used to explore problems of exponential growth and decay. In context of the Cartesian plane, students learn ideas about functions, absolute value, range, and domain; interpret graphs and their relations to corresponding equations; and analyze the effects of parameter changes on graphs of functions. Story problems relate quadratic and linear equations to geometric concepts. Problems in logic are solved using Venn diagrams.

Blaine Elementary School
Blaine, Washington

Every month some 274,000 cars, 17,000 trucks, and 1,900 buses go through the customs gate at Blaine, Washington, one of the busiest entry points on the U.S.-Canadian border. To the students who attend kindergarten through grade 4 at Blaine Elementary, numbers and facts like these could be just another part of their school's superb program of math instruction; figures and arithmetic are second nature to them. Principal E. Warren Aller believes that if his students can feel confident applying and understanding the fundamentals of computation, geometry, and problem solving, they'll be ready to take on the more sophisticated mathematical concepts they will encounter in later grades. He sets high standards and insists that all students study math for more than an hour every day. They even get to use their math skills on a modern computer robotics system. "Trying to meet your goals can be time-consuming," Mr. Aller admits, "but it pays off." Recent test scores prove he's right: 88 percent of Blaine's 4th-graders scored above the national average on the mathematics section of the Metropolitan Achievement Test.

Located in a fishing village in the northwestern-most corner of the state, this school faces tough challenges: 40 percent of its 500 students come from single-parent homes, more than a third of them receive free or reduced-price lunches, and, because of fluctuations in local employment, there is a high degree of student turnover each year. But Blaine Elementary succeeds despite its circumstances. The school takes full advantage of its site on an international border to build a solid academic curriculum. In social studies, for example, Canadian history and traditions are used as a point of comparison during lessons in American government, citizenship, and national holidays. Similarly, the different coins and stamps of the two countries are regularly used in arithmetic exercises.

Blaine Elementary's curriculum is a community effort. Meteorologists who work at a nearby port come to science classes to explain the atmosphere and to help students build a working weather station. Music specialists in the area teach students how to develop a discriminating ear. Local writers work with them in the school's Young Authors and Junior Great Books clubs, and a sister school in British Columbia joins Blaine in a student letter-exchange program.

Blaine's teachers and principal believe that "every child can learn." And they work hard to make sure every child *does* learn. They test all the students every year in every subject, monitor progress, and make changes where necessary. Everyone who works at the school — teachers, nurses, even bus drivers — participates in the Continual School Improvement Plan, a year-round review process that evaluates the quality of everything from the curriculum to the food served at lunch. "This isn't a school where we sit around wishing, 'Gee, if we could only do this,' " says Warren Aller. "We just do it."

Science

Two years ago, the International Association for the Evaluation of Educational Achievement conducted its Second International Science Study, testing American students against their counterparts in a wide variety of foreign countries. The results were grim. American 10-year-olds slipped from 4th place among 16 nations in 1970 to 8th place among 15 nations in 1986. American 14-year-olds did still worse, falling from 7th to 14th place among students in 17 countries. American students are almost in high school before they attain a level of science achievement common among Korean and Japanese 6th-graders. The Association calls its findings "grounds for concern" in the United States, and concludes that "a reexamination of how science is presented and studied is required."

That's putting it mildly. American children study only one-third to one-half as much science as do children in other advanced countries. According to the Association for Supervision and Curriculum Development, for example, our 4th-graders are officially allocated only 28 minutes of science instruction a day, and actual practice often involves even less time for the subject. Small portions aren't the only problem, of course; poor quality hurts, too. American science education is all too frequently a meager collection of dry facts, simple computations, and verbal drills rationed like thin soup across the entire elementary school curriculum. When real science is covered at all, it tends to be smothered in faddish ideas borrowed from other disciplines or made boring by incessant, pointless review. And though students overseas begin detailed consideration of discrete subjects like biology as early as 4th grade, in too many school districts around the United States serious study of science — important ideas reinforced by hands-on, experimental applications — is put off until high school.

By then it's too late. At a major education conference in 1987, science instruction supervisors from all 50 states agreed that children who were not enjoying science by 3rd grade were "lost"; after that, student attitudes toward the subject may be fixed. Right now, they seem fixed the wrong way: the National Assessment of Educational Progress recently reported that only 6 percent of 9-year-olds consider science their favorite subject. It's no surprise, then, that international comparisons show American students entering a "4th-grade slump" in science achievement from which relatively few ever recover.

We've got to do better. To maintain its position in the modern world, America needs to attract excellent young minds to the study of science.

And at the same time, we need to encourage in all our students the attributes and skills that a good year-by-year science education can help develop: curiosity; powers of observation, analysis, and description; and appreciation of a world shaped as never before by scientific and technological advances.

We can and should begin this work early, in the first few years of formal schooling. Science is not so arcane that study of it must wait for textbooks and Petri dishes. Young children are naturally inquisitive — full of questions about how and why things work the way they do. And that's where science education should start: with easy, straightforward answers to such questions, and with simple demonstrations that relate new knowledge to the familiar world. Before they finish 3rd grade, American children should have a basic vocabulary of information and skills in the natural sciences. The *James Madison Elementary School* program is designed to provide it.

Obviously, all elementary instruction must be appropriate to the age and intellectual development of its students. But the truth is that few general subjects of scientific interest are in and of themselves too difficult for grade-school children to handle. Take magnetism, for example. Maxwell's equations might be high school material, but 2nd-graders can and should be told about — and shown — magnets and their use in directional compasses. Plant growth works the same way. Mitosis and meiosis are ideas for later study of biology, but even 1st-graders are ready to learn about — and watch — the development of common flowers from seed to maturity. The point is: first things first, but without delay.

Early coverage of scientific fundamentals will require a complementary revitalization of instruction in the late elementary years. Science curricula for grades 4 through 8 must move beyond fundamentals and into preliminary investigations of more complex ideas and relationships. The *James Madison Elementary School* program begins to distinguish among the earth, life, and physical sciences in 4th grade, emphasizing one among them each year for more focused and intensive study. Disciplinary boundaries become explicit in grades 7 and 8, with one year of introductory biology and another of introductory chemistry and physics. As in the earlier grades, classroom and textbook work should be supplemented with practical demonstrations and experiments — similar but by no means limited to those described in this curriculum — that both underscore principles of scientific method and suggest science's worldly applications and possibilities.

Kindergarten

An introduction to science, with an emphasis on the observation of familiar, everyday things. Students identify common plants and animals; sense organs and their functions; simple topographical features (e.g., mountains, valleys, oceans, and rivers); the sun, Earth, and moon; heat and cold; light and shadow; common colors; and groupings of like objects. Instruction should encourage hands-on discovery and exploration of objects and phenomena.

Grade 1

Topics may include the characteristics and habitats of animals; pet care; the parts and growth patterns of plants; differences between day and night; common weather conditions and climate; properties of water and air; and forms and sources of energy. Students handle and observe growing plants; monitor and record facts of their development; and perform simple experiments involving variations in water, soil, and sunlight, predicting results and testing their hypotheses.

Grade 2

Topics may include seasonal changes and life cycles in various organisms; how seeds mature into plants; differences between vertebrates and invertebrates; the Earth's orbit and its effect on the seasons; the effect of the moon on tides; basic ideas about magnets and magnetism; forces of motion; and simple machines and their inventors. Students construct their own magnetic compasses, use them to determine general directions, and participate in orienteering games and exercises.

Grade 3

Topics may include the growth stages of animals; the food chain; simple rocks and minerals; basic physical and chemical properties of matter; the solar system, planets, moons, stars, and galaxies; important events and achievements in the history of space exploration; and electricity and electric charges. Students collect, compare, classify, and record the shape, size, weight, and texture of different rock and mineral samples.

Grade 4

A special emphasis on the earth sciences. Topics may include rock formation; glaciers; the process of erosion; the creation of fossil fuels; the atmosphere and weather forecasting; and stages of the water cycle (rain, evaporation, and clouds). Additional topics from the life and physical sciences may include the life cycle and behavior of social insects; important bones and muscles of the human body; distinguishing features of comets, asteroids, and meteors; heat as a form of energy; and the idea of heat transfer. Through news

reports and, where possible, their own observations and measurements, students monitor changes in local rainfall, temperature, barometric pressure, sunrise and sunset, humidity, and wind speed and direction, and learn simple techniques of weather prediction.

Grade 5

A special emphasis on the life sciences. Topics may include the reproduction of plants and flowers; the process of photosynthesis; the basic structures and functions of the human body; food groups and nutrition; and the evolutionary history of the Earth, including fossils, dinosaurs, and other prehistoric life. Additional topics from the earth and physical sciences may include geological change over time; problems of pollution and conservation; and complex machines and the concept of work. Students examine cross-sections of celery stems and tree trunks, grow mold on bread, observe mushroom spores by making spore prints on paper, compare different types of algae, and investigate water movement through plant and flower roots.

Grade 6

A special emphasis on the physical sciences. Topics may include the atomic theory of matter; states of matter (solid, liquid, and gas); conservation of matter; relations among weight, volume, and density; and simple optics, including telescopes. Additional topics from the life and earth sciences may include the structure of the Earth's crust and plate tectonics; distinctions between living and nonliving things; and instinct and learning in animals. Students explore, record, and graph boiling and freezing points of common substances; examine light filtered through a prism; and observe the reflection and refraction of light rays by mirrors and through lenses.

Grade 7

A broad study of biology as it applies to cells, organisms, and larger life systems. Topics may include the structure of cells; the functions of cellular organelles; elementary concepts in genetics and the role of DNA; embryology and fetal development; the function, structure, and interaction of various organ systems; classification of bacteria, fungi, plants, and animals; the structure of communities within ecological systems; and the major ecological systems of the Earth. Laboratory exercises include observation with microscopes and simple animal dissections.

Grade 8

A broad study of chemistry and physics designed to familiarize students with further atomic and macroscopic properties of matter. Topics may include the metric system of measurement; elementary particles and atomic structure; the periodic table; the structure of molecules; compounds, solutions, and mixtures; chemical reactions; Newton's first law; potential and kinetic

energy; cells, batteries, and electricity; and the motion and octaves of sound waves. Students generate and observe simple chemical reactions, isolate various substances from solutions and mixtures, and measure the effects of different weights on the arc of a pendulum, synthesizing previous laboratory work into formal principles of scientific method and procedure (hypothesis formation, identification of necessary tools and materials, testing and retesting, data collection and analysis, and concluding written reports).

School #59—Science Magnet
Buffalo, New York

Every year, thousands of visitors flock to the Buffalo Zoo to see some of the most interesting collections of plant and animal life in the country. Directing them through the zoo are a group of friendly, knowledgeable, and experienced guides and lecturers — who happen also to be 7th- and 8th-graders at School #59-Science Magnet.

School #59 — serving 852 students in pre-kindergarten through 8th grade — has one of the most unusual science programs in the nation. The school itself is located on four separate sites: one on the grounds of the Buffalo Zoological Gardens; another inside the Buffalo Museum of Science; and the remaining two just nearby. "We provide a unique experience," says principal Carol Mitchell. "The zoo and museum are natural extensions of the classroom." Throughout the year, students are able to work alongside animal keepers, veterinarians, horticulturists, anthropologists, taxidermists, and other zoo and museum personnel. They frequently observe firsthand the same animals, plants, and natural phenomena they discuss in class.

School #59's magnet program was introduced six years ago to encourage minority students' involvement in the sciences. It has done just that. Though 85 percent of the school's students come from disadvantaged homes, all of them now participate in its rigorous curriculum. In the early grades, students follow a thorough program of earth, life, and physical science that includes frequent field trips to the museum, zoo, and other sites. Teachers send home carefully prepared information packets describing experiments parents and students can do together to reinforce what has been learned in the classroom. In the intermediate years, classes begin to specialize in specific disciplines. Fifth grade is devoted to oceanography, 6th to astronomy, 7th to zoogeography (the study of biological and geographical factors affecting animal distribution), and 8th to synecology (the study of relationships between different natural communities). By 7th and 8th grade, all students are expected to deliver well-researched lectures to the zoo-going public.

The staff at School #59 works hard to coordinate science projects with other subject material. For example, students may observe constellations in science class; compute the distance between earth and the various planets and stars in math; construct a diorama of the heavens

in art; write their own myths about each star cluster in English lessons; and learn some related vocabulary words in Spanish — a subject that every student in grades 5 through 8 is required to take.

It's a powerful program. It's had powerful results. School #59's test scores have risen dramatically since the science program was instituted. In 1982, not a single student performed above grade level in reading or mathematics; indeed, few even approached it. Today, three-quarters of the student body is performing at or above grade level. And almost all School #59 graduates are exempted from freshman science requirements when they get to high school.

Mrs. Mitchell marvels at the enthusiasm with which her students approach their schoolwork: "If they miss the bus, they walk to school. When they're sick, I've got to beg them to stay home." In fact, soaring daily attendance has moved the school from 55th to 4th place in the district in just a few short years. "A lot of these kids do not see people in their neighborhoods working," says Mrs. Mitchell. "When they come to School #59, they see there is opportunity out there if they only prepare themselves."

Foreign Language

Early study of foreign languages makes sense. The imitative capacities of young children give them natural advantages as language students. And language study is good for them. It allows children a taste of the size and diversity of human experience and helps them to distinguish similarities and differences between their own and other cultures and peoples. It may even have a positive effect on their command of English. One Louisiana study, for example, showed foreign language students outperforming their peers on the 3rd-, 4th-, and 5th-grade English language arts section of that state's Basic Skills Test.

Other industrialized countries routinely acknowledge the benefits of early foreign language instruction. French students begin to study another language in 6th grade. Italian children start their language training at age 11. In Sweden, students begin taking English in 3rd grade and most add a second foreign language when they become 13.

Grade-school language training is becoming more popular in the United States, too; a recent national poll showed 84 percent approval of the idea, a huge jump in just a few years. But though high school class offerings and enrollments in the subject are more numerous than they have been in decades, foreign language is still the one academic subject most ignored by our schools — especially at the elementary level. Only 22 percent of American schools even offer foreign language instruction between kindergarten and 6th grade, and fewer than half their students actually get any of it. When they do, it often follows a curriculum too superficial or disjointed to encourage further study in the later grades.

Preparing students for serious, formal work in foreign language should be a basic goal of American elementary education. No specific technique or schedule of classes works best for all schools. And though Spanish, French, Latin, and German are the most widely taught, no one language or group of languages is necessarily better than any other. Different school districts will make different choices. What's important is that instruction begin early and continue to build toward mastery.

How early? The *James Madison Elementary School* program is designed to ensure that students receive — starting no later than 4th grade — an introduction to basic vocabulary, grammar, reading, writing, conversation, and cultural material in at least one foreign language. Some schools may wish to offer introductory material even sooner. It is not clear from research and experience that any large

number of school-age children are "too young" to study foreign language. An increasing number of American elementary schools — Chicago's LaSalle Language Academy, for example, a school described in this book — are now successfully teaching the subject at every grade level, including kindergarten. A precise determination about when language instruction should begin will probably depend on circumstances particular to individual schools and their students.

However schools choose to arrange preparatory training in the earliest years, formal language study is strongly recommended for grades 7 and 8, so that students can be prepared to pursue the subject at more advanced levels in high school.

Grades 4 through 6

An introduction to one foreign language, with a strong initial emphasis on pronunciation, intonation, conversation and dialogue, and vocabulary building. Grammar begins with simple verbs and sentence structure. Students read and write short passages. Attention is paid to elementary cultural material from countries in which the language is national or widespread, including children's games, folksongs for choral singing, fairy tales, legends, and simple arts and crafts.

Grades 7 and 8

Two full-year elective courses of formal language instruction, building on previously acquired skills. Together these courses cover material studied in the first year of high school foreign language: more advanced vocabulary, grammar, syntax, and constructions; extended conversation; selections of foreign literature; writing assignments; elementary translations; and frequent cultural lessons.

LaSalle Language Academy
Chicago, Illinois

In inner-city Chicago, a class of 7th-graders is reading *The Little Prince,* a classic by Antoine de Saint-Exupéry. Reading it in French, that is. For the 555 students at LaSalle Language Academy, a citywide magnet school, foreign language study begins the first day of kindergarten and continues through 8th grade. "You walk down those halls and listen to what's coming out the doors, and you'd swear you were at The Hague," claims one mother.

In the late 1970s, LaSalle's enrollment had dipped to 175 students and officials were considering closing the school. Today, a decade after the foreign language program was established, LaSalle receives eight applications for every single space available and draws students from every ethnic and socioeconomic group in the city. LaSalle has a "wonderful mix of students, which adapts perfectly to study of foreign languages," says principal Amy Weiss Narea,

All LaSalle students spend 40 minutes a day studying French, Spanish, German, or Italian. In the early grades, they develop speaking skills through songs, games, and folktales. In the middle years, they focus on reading, writing, and conversation. And by the time they reach 7th and 8th grade, LaSalle students are engaged in formal study of grammar and literature.

Foreign languages may symbolize LaSalle, but excellence is expected in all subjects. "We feel that we are educating the renaissance child," says Ms. Narea. That means offering a solid academic program in core subjects like English, math, science, social studies, fine arts, and physical education. Beginning in 2nd grade, for example, students read classic short stories as part of the "Junior Great Books" program. Fine arts instruction features frequent in-school musical performances, and workshops sponsored by the Art Institute of Chicago. And in science, students fully integrate experimentation and observation with their textbook study.

The depth and thoroughness of their curriculum have won LaSalle students more than their share of honors. For two years in a row, the school has taken first place at the citywide "Academic Bowl" Competition. Last year, LaSalle captured the first place trophy in the math division of Chicago's "Academic Olympics." On average, LaSalle students score at least a year above grade level on both the reading

and math sections of the Iowa Test of Basic Skills; in many grades, they do better still. "Our scores are good," principal Narea agrees. "But there's more to it than that. We want to give each student a strong liberal arts foundation."

The school's parents and teachers work hard at it. "We believe you get out of an educational experience what you put into it," says Ms. Narea, "and everyone involved with LaSalle gives his all to make the school succeed."

Fine Arts

On one level at least, these are boom times for the arts in American elementary education. Our students spend more time "doing" music and art than they have for years. Forty-two states now require local school districts to offer some form of arts instruction. Today, roughly half of all 7th- and 8th-graders are enrolled in music or visual arts classes.

But in art as in other subjects, more doesn't necessarily mean better, and there are disturbing signs that our children aren't learning much about art, no matter how long they study it. The National Assessment of Educational Progress has conducted two national surveys of student knowledge in music and the visual arts, one in the early 1970s and another in 1978–79. Results from the first tests were poor; results from the second were poorer still. We have no reliable evidence of significant improvement since then.

Why? For one thing, Americans have for too long viewed classroom art as fundamentally unserious and extraneous to basic learning — as an entertaining diversion from more rigorous and important academic work. Moreover, we too often see talent and appreciation for art as inborn — you either have it or you don't — and therefore unteachable. It's hard to teach an unteachable subject, of course, and arts educators have had trouble figuring a way out of the problem. One common and unhappy solution has been the surrender of art as a discrete discipline — the subordination of art instruction to nonartistic (and questionable) goals. Written elementary school arts curricula, where they exist at all, tend to reflect a purely therapeutic and affective vision derived from developmental psychology. Classroom activities in many schools around the country lack all formal structure and sensibility, and are designed instead to appeal almost exclusively to children's feelings and emotions.

Feelings and emotions are obviously important. But what's missing from so much elementary arts education is the art. A report released earlier this year by the National Endowment for the Arts exaggerated the problem only a little. "Basic arts education does not exist in the United States today," it concluded. Absent is the sequential, cumulative instruction in content, knowledge, and skills that we take for granted in other academic subjects.

The fine arts should be a subject like any other in our schools. Music and visual art *are* basics of a good education, not escapes from it. They reveal the creative and aesthetic aspect of the human mind. They train

young eyes and ears to appreciate the physical world around us. They link us with our past, and teach us something valuable about the societies, traditions, and cultures which have influenced our modern civilization. And because art and music have a history, substance, and structure all their own, they can and must be taught — in an organized and coherent fashion.

The *James Madison Elementary School* curriculum provides students in the earliest grades with first experiences in the disciplined enjoyment and creation of music, painting, and crafts; significant examples of these and other arts; and a brief treatment of ideas about artistic form and content. Later classes continue to offer lessons in creative expression and understanding, and begin to relate these imaginative activities to cultural and historical differences and developments. The 7th- and 8th-grade program gives students a broad introduction to the historical progression of the Western visual and musical arts; readings and exercises in formal criticism; and more advanced, detailed instruction about creative techniques employed in a variety of artistic media.

Kindergarten through Grade 3

An introduction to basic ideas and skills in music and art. Music lessons familiarize students with rhythm and melody through classroom songs, recordings, and experiments with simple percussion instruments; teach students to identify musical instruments by their shape and composition; and introduce distinctions among pitch, volume, and timbre in musical sound. Art lessons include exercises in painting, drawing, and craftmaking; instruction in shape, color, form, texture, and the visual effects they create; examples of sculpture, painting, photography, design, and architecture that illustrate these effects; and first attempts to identify and describe content in works of art. Where and when possible, field trips are made to museum art exhibits and concerts.

Grades 4 through 6

Continued study of music and art. Music lessons familiarize students with the lives and works of selected great composers; teach them to recognize different musical styles and forms; introduce recordings of music from other countries and cultures; demonstrate how sounds are made and notes are played on various musical instruments; and begin a hands-on investigation of elementary theory — including such ideas as harmony, tempo, key, and simple notation — as applied to music heard and studied in class. Art lessons familiarize students with selected great painters, sculptors, architects, and

photographers; refine their ability to look at art and interpret it; and provide classroom opportunities for work on creative projects in a variety of media, with emphasis on elements present in the works of art they have viewed — perspective, proportion, scale, symmetry, motion, color, and light. Where and when possible, field trips are made to museum art exhibits and concerts.

Grades 7 and 8

Students take both of the following two half-year courses in the theory, history, and practice of music and art:

Art Appreciation. An introduction to major developments in the Western visual arts, from prehistoric drawings to the present day. Classroom activities include short readings which expand the vocabulary of art history, biography, and criticism; examinations of a small number of works in detail through film, slides, or museum trips; and instruction in techniques of drawing, color-mixing, and painting.

Music Appreciation. An introduction to major developments in Western music, from earliest surviving examples to the present day. Classroom activities include short readings which expand the vocabulary of music history, biography, and criticism; examinations of a small number of works in detail through recordings, classroom performance, or concert trips; and instruction in elementary techniques of composition and instrumentation.

St. Patrick School
Miami Beach, Florida

They call it a "little League of Nations." Its 245 students hail from 32 different countries. Eighty percent are Hispanic, most speak no English at home, a majority come from disadvantaged backgrounds, and many are recent refugees from Central and South America. But each child is "embraced and educated," says principal Christine Lamadrid of St. Patrick's, a parochial school for kindergarten through 8th grade.

Operated by the Archdiocese of Miami, St. Patrick's was founded in 1926 to serve the children of wealthy Northerners who spent their winters vacationing in the area — the "snowbirds," they were called. As the Miami Beach community declined in the 1960s and 1970s, so too did the school's enrollment and standards. Truancy was high, achievement was low, and parents no longer wanted to send their children to St. Patrick's. Then Mrs. Lamadrid arrived.

A graduate of "St. Pat's" herself, Mrs. Lamadrid was determined to restore the school's commitment to academic excellence. And in five short years, she has done just that. Test results have gone up dramatically. Since 1983, St. Pat's scores on the McGraw-Hill Comprehensive Tests of Basic Skills have climbed 23 points in reading and 38 points in math. Area high schools now scramble to recruit the school's graduates. And no wonder: almost 70 percent enroll in honors courses during their freshman years.

It's done with a carefully planned and unashamedly traditional core curriculum. Because she has so many non-English speaking students, Mrs. Lamadrid considers reading and writing the school's top academic priority. Except for kindergarten, every school day begins with a 50-minute period during which students read, discuss, and analyze a wide assortment of children's literature. Oral and written book reports are regular assignments from 1st grade on. In the upper grades, students read three major novels a year — books like Edith Wharton's *Ethan Frome,* John Steinbeck's *The Red Pony,* and Harper Lee's *To Kill a Mockingbird.* All students spend an additional hour each day in English class, where they are drilled in the basics of grammar, usage, and composition. Classes in math, science, computers, Spanish, religion, physical education, art, and music round out the school's rigorous academic program.

Mrs. Lamadrid knows how each student is doing in class; she personally reviews each test paper before it's returned, often with a note of encouragement or praise. "There's a feeling of unity here, a strong bond between students and teachers, and a tremendous commitment to excellence," she says. And things can only get better; despite the school's success, Mrs. Lamadrid is still not satisfied: "We know we're not perfect. There's so much left to do."

Physical Education/Health

Grade-school children have growing bodies, and growing bodies need plenty of exercise. Some kids get that exercise by themselves, of course. But many others apparently do not. The President's Council on Physical Fitness and Sports has reported more than once in recent years on the remarkably poor physical condition of some American youngsters: they run too slowly, their muscles are too weak, and they spend far too much time just sitting around. What can our schools do to help?

Most American elementary schools make time for play. They should. Kids like to play — it's a healthy and creative outlet for their abundant energy. But recess and free play don't always provide the programmatic discipline necessary for children just learning to control their movements and cooperate with others. Fitness, coordination, and sportsmanship don't simply happen; they have to be taught systematically. Organized school physical education can do a lot to provide the knowledge, skills, and motivation children need for a lifetime of health and exercise.

And along the way, it can contribute to academic achievement. Some research suggests that disciplined physical activity may sharpen both mental acuity and appetite for learning. Physical education is a part of schooling, not a diversion from it. There's plausible truth in the old saw "healthy body, healthy mind"; children probably learn better when they're physically fit.

The *James Madison Elementary School* curriculum describes a progressive sequence of regular instruction in fitness, exercise, and team and individual games and sports. It includes a program of health designed to educate children about anatomy; hygiene; nutrition; disease prevention; first aid and safety; the dangers of illegal drugs, tobacco, and alcohol; and — when and where appropriate — sexual maturity and family life.

Kindergarten through Grade 3

A general program of physical and health education. Physical education activities cover body control (rhythm, flexibility, agility, balance, direction, speed, and intensity); simple sports skills (running, jumping, throwing, catching, and kicking); and basic games and exercises (rope jumping, footraces, dances, and gymnastics). Instruction should encourage fitness, respect for

rules, sportsmanship, safety, and use and care of sports equipment. Topics in health include hygiene; nutrition; parts of the body and ideas about growth; disease prevention; first aid and safety; the dangers of alcohol, tobacco, and illegal drugs; and rest and exercise.

Grades 4 through 6

A general program of physical and health education. Physical education activities apply previously learned skills to common team and individual sports; teach the terminology and rules associated with each game; introduce further dances and gymnastic exercises; and continue to emphasize fitness, respect for rules, sportsmanship, safety, and use and care of sports equipment. Topics in health include hygiene; nutrition; disease prevention; first aid and safety; peer resistance and individual responsibility in connection with alcohol, tobacco, and illegal drugs; and rest and exercise. Lessons about sexual maturation — taught according to community standards and with parental involvement and approval — should provide basic information about physiological and psychological changes associated with puberty; conception, pregnancy, and childbirth; and the importance of the family.

Grades 7 and 8

A general program of physical and health education. Physical education activities refine strategy, skills, and understanding of rules in selected team and individual sports; introduce further dance and gymnastic exercises for coordination and aerobics; and continue to emphasize fitness, respect for rules, sportsmanship, safety, and use and care of sports equipment. Topics in health include hygiene; nutrition; identification and prevention of common, chronic, and communicable diseases; first aid, safety, and emergency medical care; the dangers of alcohol, tobacco, and illegal drugs to individuals and society; rest and exercise; and self-assessment of weight, blood pressure, and other indicators of general health. Sex education — taught according to community standards and with parental involvement and approval — should provide basic information about the biological "facts of life" in an open, serious, and moral context, emphasizing responsibility, awareness of emotional and medical considerations, and the importance of the family.

Maryetta Elementary School
Stilwell, Oklahoma

The town of Stilwell is isolated in the rocky hills of eastern Oklahoma. Farming is difficult and industry is scarce. But as one real estate agent told principal Carthel Means, "It's easy to sell land in the area; everyone wants to send his kids to Maryetta."

In his 25 years at Maryetta Elementary School, Mr. Means has watched his school grow from a two-room building with just a few dozen students to a sprawling modern structure with nearly 400 students in kindergarten through 8th grade. Located at the very end of the "Trail of Tears" — the path taken by Cherokee Indians when they were forced to move from North Carolina 150 years ago — the school serves a student body that is almost 80 percent Native American. Most families in the area are poor, and virtually all Maryetta students participate in the school lunch and breakfast programs.

It's a special challenge to Mr. Means' faculty and staff. "One can't assume that these children go home to a house with a desk to work at or even adequate heating and electricity," he explains. But that doesn't mean lowered school expectations. Just the opposite, in fact; Maryetta offers a solid, ambitious curriculum, and teachers provide plenty of extra help to those who need it.

Because teachers noticed that many of their Cherokee-speaking students were shy and withdrawn in class, the school puts a special emphasis on language skills. "We don't just want students to hear us," Mr. Means says. "We want them to listen, to follow directions, and to comprehend." So Maryetta teaches a traditional English program that stresses oral and written communication, grammar, and correct usage, as well as a Cherokee language class where Indian and other students work side by side. Maryetta's other academic standouts include: a "hands-on" science curriculum that encourages understanding through observation; a rigorous math program that offers membership in a prestigious advanced math club to students in grades 7 and 8; and social studies lessons that include field trips to local historical sites.

As the school has grown, so has its reputation for excellence. The Stanford Achievement Tests show 80 percent of Maryetta students performing above the national average in reading and mathematics. Several years ago, Maryetta voluntarily lengthened the school day by 30 minutes, but nobody seems to mind. Daily student attendance is

97 percent. One recent Department of Education visitor noted that students come to the school every day with "obvious enjoyment." Their parents come, too; Mr. Means' open-door policy brings area adults into the school for frequent socials, student performances, and planning meetings. He listens to their suggestions and acts on them. "Maryetta Elementary is giving the people of this community what they want," says Mr. Means. "It's a school they are proud to send their children to."

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